1986 SUBJECT INDEX

Activated Carbons

Desorption of Organics Formed on Activated Carbon 78:2:82
Evangelos A. Voudrias, Vernon L. Snoeyink, and Richard A. Larson
Design of the GAC Treatment Facility at Cincinnati 78:4:146
Garret P. Westerhoff and Richard Miller
Competitive Adsorption Among VOCs on Activated Carbon and Carbonaceous Resin 78:4:181
Emery Jenncheng Kong and Francis A. DiGiano
Regional Reactivation of Granular Activated Carbon 78:5:38
Jeffrey Q. Adams, Robert M. Clark, Benjamin W. Lykins Jr., and David Kittredge
Influence of pH on the Removal of Organics by Granular Activated Carbon 78:5:89
Michael J. Semmens, Gregor E. Norgaard, Gary Hohenstein, and Alan B. Staples
Nitrification and Nitrosation on the Surface of GAC 78:8:70
Francis A. DiGiano, Richard A. Carrier, and Andrea M. Dietrich
Influence of Coagulation on Removal of Organics by Granular Activated Carbon 78:9:62
Michael J. Semmens, Alan B. Staples, Gary Hohenstein, and Gregor E. Norgaard
Evaluating Activated Carbons for Removing Low Concentrations of Taste- and Odor-Producing Organics 78:11:76
Shala Lalezary, Massoud Pirbazari, and Michael J. McGuire

Aeration

Removal of Trihalomethanes by Packed-Column and Diffused Aeration 78:2:62
Louis J. Bilello and J. Edward Singley
Design and Evaluation of an Air-Stripping Tower for Removing VOCs From Groundwater 78:9:87
David W. Hand, John C. Crittenden, Joseph L. Gehin, and Benjamin W. Lykins Jr.

Algae

Technical Note: Biological Removal of Ammonia at Roxana, Illinois 78:5:94
Jennifer Kurtz Crooks, Vernon L. Snoeyink, Michael D. Curry, and Marty L. Reynolds

Ammonia Removal

Technical Note: Biological Removal of Ammonia at Roxana, Illinois 78:5:94
Jennifer Kurtz Crooks, Vernon L. Snoeyink, Michael D. Curry, and Marty L. Reynolds

Asbestos

Roundtable 78:11:18

Barium Removal

Weak-Acid Ion Exchange for Removing Barium, Radium, and Hardness 78:9:98
David W. Snyder, Vernon L. Snoeyink, and Julie L. Pfeffer

Billing

Choosing a Second Generation Computerized Billing System 78:5:34
J. Peter Wintish

Cavitation

Test Procedures for Determining Cavitation Limits in Control Valves 78:11:55
William J. Rahmeyer

Chloramines

Effects of Chlorine and Ammonia Application Points on Bactericidal Efficiency 78:1:62
Edward G. Means III, Theodore S. Tanaka, Dennis J. Otsuka, and Michael J. McGuire
Chemical Products and Toxicologic Effects of Disinfection 78:11:66
Benjamin W. Lykins Jr., Wayne Koffskey, and Robert G. Miller

Chlorination

Chlorination to Prevent and Control Waterborne Disease 78:1:49
Edwin C. Lippy
Chemical Products and Toxicologic Effects of Disinfection 78:11:66
Benjamin W. Lykins Jr., Wayne Koffskey, and Robert G. Miller

Chlorine Dioxide

Chlorine Dioxide for Taste and Odor Control 78:3:84
George S. Walker, Fat Piu (Tom) Lee, and E. Marco Aieta
A Review of Chlorine Dioxide in Drinking Water Treatment 78:6:62
E. Marco Aieta and James D. Berg
Toxicological Problems Associated With Chlorine Dioxide 78:6:73
Lyman W. Condie
Experience With Chlorine Dioxide at Denver's Reuse Plant 78:6:79
William C. Lauer, Stephen R. Lohman, and Stephen E. Rogers
Using Chlorine Dioxide for Trihalomethane Control 78:6:88
Benjamin W. Lykins Jr. and Mark H. Griese
Removal of By-products of Chlorine and Chlorine Dioxide at a Hemodialysis Center 78:6:94
Charles Z. Steinbergs
Chemical Products and Toxicologic Effects of Disinfection 78:11:66
Benjamin W. Lykins Jr., Wayne Koffskey, and Robert G. Miller

Clarification

Influence of Floc Size Distribution on Clarification 78:8:75
Gregory D. Reed and Patricia C. Mery

Coagulation

Effects of Low Temperature on the Removal of Trihalomethane Precursors by Coagulation 78:4:189
William R. Knocke, Sara West, and Robert C. Hoehn
Removal of Dissolved Organic Carbon by Coagulation With Iron Sulfate 78:5:74
Robert L. Sinsabaugh III, Robert C. Hoehn, William R. Knocke, and Arthur E. Linkins III
Influence of Floc Size Distribution on Clarification 78:8:75
Gregory D. Reed and Patricia C. Mery
Influence of Coagulation on Removal of Organics by Granular Activated Carbon 78:9:62
Michael J. Semmens, Alan B. Staples, Gary Hohenstein, and Gregor E. Norgaard

Computers

Choosing a Second Generation Computerized Billing System 78:5:34
J. Peter Wintish
A Computer Hardware Primer 78:8:32
Joseph R. Kroon and Robert F. Strayer Jr.

1986 SUBJECT INDEX

Activated Carbons

Desorption of Organics Formed on Activated Carbon 78:2:82
Evangelos A. Voudrias, Vernon L. Snoeyink, and Richard A. Larson
Design of the GAC Treatment Facility at Cincinnati 78:4:146
Garret P. Westerhoff and Richard Miller
Competitive Adsorption Among VOCs on Activated Carbon and Carbonaceous Resin 78:4:181
Emery Jenncheng Kong and Francis A. DiGiano
Regional Reactivation of Granular Activated Carbon 78:5:38
Jeffrey Q. Adams, Robert M. Clark, Benjamin W. Lykins Jr., and David Kittredge
Influence of pH on the Removal of Organics by Granular Activated Carbon 78:5:89
Michael J. Semmens, Gregor E. Norgaard, Gary Hohenstein, and Alan B. Staples
Nitrification and Nitrosation on the Surface of GAC 78:8:70
Francis A. DiGiano, Richard A. Carrier, and Andrea M. Dietrich
Influence of Coagulation on Removal of Organics by Granular Activated Carbon 78:9:62
Michael J. Semmens, Alan B. Staples, Gary Hohenstein, and Gregor E. Norgaard
Evaluating Activated Carbons for Removing Low Concentrations of Taste- and Odor-Producing Organics 78:11:76
Shala Lalezary, Massoud Pirbazari, and Michael J. McGuire

Aeration

Removal of Trihalomethanes by Packed-Column and Diffused Aeration 78:2:62
Louis J. Bilello and J. Edward Singley
Design and Evaluation of an Air-Stripping Tower for Removing VOCs From Groundwater 78:9:87
David W. Hand, John C. Crittenden, Joseph L. Gehin, and Benjamin W. Lykins Jr.

Algae

Technical Note: Biological Removal of Ammonia at Roxana, Illinois 78:5:94
Jennifer Kurtz Crooks, Vernon L. Snoeyink, Michael D. Curry, and Marty L. Reynolds

Ammonia Removal

Technical Note: Biological Removal of Ammonia at Roxana, Illinois 78:5:94
Jennifer Kurtz Crooks, Vernon L. Snoeyink, Michael D. Curry, and Marty L. Reynolds

Asbestos

Roundtable 78:11:18

Barium Removal

Weak-Acid Ion Exchange for Removing Barium, Radium, and Hardness 78:9:98
David W. Snyder, Vernon L. Snoeyink, and Julie L. Pfeffer

Billing

Choosing a Second Generation Computerized Billing System 78:5:34
J. Peter Wintish

Cavitation

Test Procedures for Determining Cavitation Limits in Control Valves 78:11:55
William J. Rahmeyer

Chloramines

Effects of Chlorine and Ammonia Application Points on Bactericidal Efficiency 78:1:62
Edward G. Means III, Theodore S. Tanaka, Dennis J. Otsuka, and Michael J. McGuire
Chemical Products and Toxicologic Effects of Disinfection 78:11:66
Benjamin W. Lykins Jr., Wayne Koffskey, and Robert G. Miller

Chlorination

Chlorination to Prevent and Control Waterborne Disease 78:1:49
Edwin C. Lippy
Chemical Products and Toxicologic Effects of Disinfection 78:11:66
Benjamin W. Lykins Jr., Wayne Koffskey, and Robert G. Miller

Chlorine Dioxide

Chlorine Dioxide for Taste and Odor Control 78:3:84
George S. Walker, Fat Piu (Tom) Lee, and E. Marco Aieta
A Review of Chlorine Dioxide in Drinking Water Treatment 78:6:62
E. Marco Aieta and James D. Berg
Toxicological Problems Associated With Chlorine Dioxide 78:6:73
Lyman W. Condie
Experience With Chlorine Dioxide at Denver's Reuse Plant 78:6:79
William C. Lauer, Stephen R. Lohman, and Stephen E. Rogers
Using Chlorine Dioxide for Trihalomethane Control 78:6:88
Benjamin W. Lykins Jr. and Mark H. Griese
Removal of By-products of Chlorine and Chlorine Dioxide at a Hemodialysis Center 78:6:94
Charles Z. Steinbergs
Chemical Products and Toxicologic Effects of Disinfection 78:11:66
Benjamin W. Lykins Jr., Wayne Koffskey, and Robert G. Miller

Clarification

Influence of Floc Size Distribution on Clarification 78:8:75
Gregory D. Reed and Patricia C. Mery

Coagulation

Effects of Low Temperature on the Removal of Trihalomethane Precursors by Coagulation 78:4:189
William R. Knocke, Sara West, and Robert C. Hoehn
Removal of Dissolved Organic Carbon by Coagulation With Iron Sulfate 78:5:74
Robert L. Sinsabaugh III, Robert C. Hoehn, William R. Knocke, and Arthur E. Linkins III
Influence of Floc Size Distribution on Clarification 78:8:75
Gregory D. Reed and Patricia C. Mery
Influence of Coagulation on Removal of Organics by Granular Activated Carbon 78:9:62
Michael J. Semmens, Alan B. Staples, Gary Hohenstein, and Gregor E. Norgaard

Computers

Choosing a Second Generation Computerized Billing System 78:5:34
J. Peter Wintish
A Computer Hardware Primer 78:8:32
Joseph R. Kroon and Robert F. Strayer Jr.

Computer-Controlled Groundwater Management in Zurich 78:8:36
Maarten Schalekamp
Honolulu's New SCADA System 78:8:43
Ronald N. Wada, Edward H.P. Chan, and Kazu Hayashida
Automating Water Consumption Data Manipulation 78:8:49
Timothy D. Hirrel
Simulating Water System Operation During Periods of Drought .. 78:8:53
Dean Randall, Mark H. Houck, and Jeff R. Wright
Developing and Applying the Water Supply Simulation Model ... 78:8:61
Robert M. Clark and Richard M. Male

Conservation

Reducing the Cost of Water.... 78:6:41
John E. Regnier, Edgar H. Waldrup, and John A. Garrett

Constant-Rate Filtration

Comparing Constant-Rate and Declining-Rate Filtration 78:12:26
David J. Hilmoe and John L. Cleasby

Control Valves

Test Procedures for Determining Cavitation Limits in Control Valves 78:11:55
William J. Rahmeyer

Customer Relations

Tucson's Customer Relations Program 78:6:52
Robert L. Brice

Declining-Rate Filtration

Comparing Constant-Rate and Declining-Rate Filtration 78:12:26
David J. Hilmoe and John L. Cleasby

Demand

Automating Water Consumption Data Manipulation 78:8:49
Timothy D. Hirrel

Desalination

Desalination: The Solution to Oman's Thirst 78:7:80
Abdullah A. Dawood and Ralph W. Leidholdt

Developing Countries

Upland Watershed Management in Rural Pakistan..... 78:7:72
Robert K. Dixon and James A. Perry
Desalination: The Solution to Oman's Thirst 78:7:80
Abdullah A. Dawood and Ralph W. Leidholdt
Organizational and System Improvements in Cairo..... 78:7:86
Kamal El Din Hegab
A New Approach to Treatment Plant Design and Construction in Latin America 78:7:92
Jorgé Arboleda-Valencia
Optimizing Direct Filtration in Brasilia 78:7:106
John R. Bratby

Diatomaceous Earth Filtration

Diatomaceous Earth Filtration of *Giardia* Cysts and Other Substances 78:1:76
Kelly P. Langé, William D. Bellamy, David W. Hendricks, and Gary S. Logsdon
Confluence 78:1:85

Direct Filtration

Optimizing Direct Filtration in Brasilia 78:7:106
John R. Bratby
Implementing Direct Filtration and Natural Freezing of Alum Sludge..... 78:12:52
David E. Fitch and C. Michael Elliott
Effects of Cationic Polyelectrolytes on the Removal of Suspended Particulates During Direct Filtration 78:12:57
Theodore S. Tanaka and Massoud Pirbazari

Distribution

Water Systems Standards Survey 78:11:30
Stephen D. Rhoades
Restoring the Flow of a Finished Water Pipeline 78:11:35
David E. Fitch and Gary R. McCollum
Water Contamination Caused by Gasoline Permeating a Polybutylene Pipe..... 78:11:39
William G. Leseman
The Economics of Remote Meter Reading 78:11:44
Robert S. Shierry
Evaluating Relative Stringencies of Existing and Proposed Microbiological MCLs..... 78:11:47
Kevin W. Dempsey and Wesley O. Pipes
Test Procedures for Determining Cavitation Limits in Control Valves..... 78:11:55
William J. Rahmeyer

Drought

Managing Droughts Through Triggering Mechanisms..... 78:6:46
Margaret S. Hrezo, Phyllis G. Bridgeman, and William R. Walker
Simulating Water System Operation During Periods of Drought .. 78:8:53
Dean Randall, Mark H. Houck, and Jeff R. Wright

Filtration

Diatomaceous Earth Filtration of *Giardia* Cysts and Other Substances 78:1:76
Kelly P. Langé, William D. Bellamy, David W. Hendricks, and Gary S. Logsdon
Removing Giardia Cysts From Low Turbidity Waters by Rapid Rate Filtration 78:5:66
Mohammed Y. Al-Ani, David W. Hendricks, Gary S. Logsdon, and Charles P. Hibler
Optimizing Direct Filtration in Brasília 78:7:106
John R. Bratby
Comparing Constant-Rate and Declining-Rate Filtration 78:12:26
David J. Hilmce and John L. Cleasby
Design and Operation of a Slow Sand Filter 78:12:35
Timothy J. Seelaus, David W. Hendricks, and Brian A. Janonis
Rapid Rate Filtration of Low Turbidity Water Using Field-Scale Pilot Filters 78:12:42
Ron R. Mosher and David W. Hendricks
Implementing Direct Filtration and Natural Freezing of Alum Sludge..... 78:12:52
David E. Fitch and C. Michael Elliott
Effects of Cationic Polyelectrolytes on the Removal of Suspended Particulates During Direct Filtration 78:12:57
Theodore S. Tanaka and Massoud Pirbazari
Predicting the Expansion Behavior of Filter Media 78:12:66
A.H Dharmarajah and John L. Cleasby

Flavor Profile Analysis

The Flavor Profile Analysis Method: Taste and Odor Control of the Future..... 78:3:50
Jeroen H.M. Bartels, Gary A. Burlingame, and I.H. (Mel) Suffet

Full-Cost Pricing

Full-Cost Water Pricing 78:2:52
James Goldstein

Fungi

Fungi in Distribution Systems 78:1:53
William D. Rosenzweig, Harvey Minnigh, and Wesley O. Pipes

Geosmin

A Case Study of Geosmin in Philadelphia's Water 78:3:56
Gary A. Burlingame, Roger Dann, and Geoffrey L. Brock

Giardia

Diatomaceous Earth Filtration of Giardia Cysts and Other Substances 78:1:76
Kelly P. Langé, William D. Bellamy, David W. Hendricks, and Gary S. Logsdon
Confluence 78:1:85
Removing Giardia Cysts From Low Turbidity Waters by Rapid Rate Filtration 78:5:66
Mohammed Y. Al-Ani, David W. Hendricks, Gary S. Logsdon, and Charles P. Hibler

Groundwater

Computer-Controlled Groundwater Management in Zurich 78:8:36
Maarten Schalekamp
Protection and Management of Spokane's Sole Source Aquifer 78:9:62
William R. Dobratz, Robert L. Wubbena, and John M. Maxwell
Chemical Monitoring of Wisconsin's Groundwater 78:9:70
Robert M. Krill and William C. Sonzogni
Removing Contaminants by Groundwater Recharge Basins 78:9:76
John E. Salo, Doug Harrison, and Elaine M. Archibald
Responding to Industrial Contamination of Groundwater: A Case Study 78:9:82
Raymond J. Dever
Design and Evaluation of an Air-Stripping Tower for Removing VOCs From Groundwater 78:9:87
David W. Hand, John C. Crittenden, Joseph L. Gehin, and Benjamin W. Lykins Jr.
Arizona's Groundwater Code: Strength in Compromise 78:10:79
Kathleen Ferris
Groundwater Recharge: Enhancing Arizona's Aquifers 78:10:85
Wallace A. Ambrose and Pat Lynn

Hardness Removal

Weak-Acid Ion Exchange for Removing Barium, Radium, and Hardness 78:9:98
David W. Snyder, Vernon L. Snoeyink, and Julie L. Pfeffer

Health Effects

Waterborne Viral Gastroenteritis 78:1:34
Fred P. Williams Jr. and Elmer W. Akin
Gastroenteritis: Case Study of a Colorado Outbreak 78:1:40
Richard S. Hopkins, Richard J. Karlin, G. Barry Gaspard, and Roger Smades
Potential Health Effects of Mercury in Water Supply Wells 78:1:45
Thomas R. Stolzenburg, Robert R. Stanforth, and David G. Nichols
Chlorination to Prevent and Control Waterborne Disease 78:1:49
Edwin C. Lippy
Fungi in Distribution Systems 78:1:53
William D. Rosenzweig, Harvey Minnigh, and Wesley O. Pipes
Isolating Viruses From Finished Water 78:1:56
Joan B. Rose, Charles P. Gerba, Shri N. Singh, Gary A. Toranzos, and Bruce Keswick
Legionella Contamination of a Preoperational Treatment Plant 78:1:70
Lance Voss, Kenneth S. Button, Richard C. Lorenz, and Olli H. Tuovinen
Diatomaceous Earth Filtration of *Giardia* Cysts and Other Substances 78:1:76
Kelly P. Langé, William D. Bellamy, David W. Hendricks, and Gary S. Logsdon
Toxicological Problems Associated With Chlorine Dioxide 78:6:73
Lyman W. Condie

Indian Water Rights

Indian Reservation Water Rights 78:10:48
Richard B. Collins
Water Management in Indian Country 78:10:55
Steven J. Shupe
Reallocating Water in the West 78:10:63
Gary D. Weatherford and Steven J. Shupe

Industrial Water

Viewpoint 78:5:10
Water Rates: An Industrial User's View 78:5:42
Ernest Harwig and Ronald A. Smith
Industrial Use of Reverse Osmosis 78:5:47
Paul D. Sinisgalli and James L. McNutt
A Zero Discharge Steam Electric Power Generating Station ... 78:5:52
Hugh J. Martin and Gary R. Miller
Posttreatment of Reverse Osmosis Product Waters 78:5:59
Lynn E. Applegate

Invertebrates

Occurrence and Public Health Significance of Invertebrates in Drinking Water Systems ... 78:9:105
Richard V. Levy, Frederick L. Hart, and Ronald D. Cheetham

Ion Exchange

Ion Exchange for the Removal of Nitrate From Well Water 78:5:83
Richard P. Lauch and Gerald A. Guter
Weak-Acid Ion Exchange for Removing Barium, Radium, and Hardness 78:9:98
David W. Snyder, Vernon L. Snoeyink, and Julie L. Pfeffer

Leak Detection

Reducing the Cost of Water 78:6:41
John E. Regnier, Edgar H. Waldrup, and John A. Garrett

Legionella

Legionella Contamination of a Preoperational Treatment Plant 78:1:70
Lance Voss, Kenneth S. Button, Richard C. Lorenz, and Olli H. Tuovinen

Mass Spectrometry

Using Isotope Dilution Mass Spectrometry to Determine Aqueous Trichloroacetic Acid 78:4:175
Daniel L. Norwood, Russell F. Christman, J. Donald Johnson, and J. Ronald Hass

Mercury

Potential Health Effects of Mercury in Water Supply Wells 78:1:45
Thomas R. Stolzenburg, Robert R. Stanforth, and David G. Nichols

Meter Reading

The Economics of Remote Meter Reading 78:11:44
Robert S. Shierry

Microbiological MCLs

Evaluating Relative Stringencies of Existing and Proposed Microbiological MCLs 78:11:47
Kevin W. Dempsey and Wesley O. Pipes

Nitrification

Nitrification and Nitrosation on the Surface of GAC 78:8:70
Francis A. DiGiano, Richard A. Carrier, and Andrea M. Dietrich

Organics

The Nature of Organics Removed During Treatment of Mississippi River Water 78:2:76
M.J. Semmens and A.B. Staples
Desorption of Organics Formed on Activated Carbon 78:2:82
Evangelos A. Voudrias, Vernon L. Snoeyink, and Richard A. Larson
Influence of Coagulation on Removal of Organics by Granular Activated Carbon 78:9:62
Michael J. Semmens, Alan B. Staples, Gary Hohenstein, and Gregor E. Norgaard
Chemical Monitoring of Wisconsin's Groundwater 78:9:70
Robert M. Krill and William C. Sonzogni
Responding to Industrial Contamination of Groundwater: A Case Study 78:9:82
Raymond J. Dever
Design and Evaluation of an Air-Stripping Tower for Removing VOCs From Groundwater 78:9:87
David W. Hand, John C. Crittenden, Joseph L. Gehin, and Benjamin W. Lykins Jr.
Water Contamination Caused by Gasoline Permeating a Polybutylene Pipe 78:11:39
William G. Leseman
Evaluating Activated Carbons for Removing Low Concentrations of Taste- and Odor-Producing Organics 78:11:76
Shala Lalezary, Massoud Pirbazari, and Michael J. McGuire

Ozonation

The French Connection: Cuisine and Water Treatment 78:7:52
Ida M. Sayre
Chemical Products and Toxicologic Effects of Disinfection 78:11:66
Benjamin W. Lykins Jr., Wayne Koffskey, and Robert G. Miller
Ozonation: An Economic Choice for Water Treatment 78:11:83
Cheng-nan Weng, Donald L. Hoven, and Barry J. Schwartz

Performance Bonds

Penal Sums of Performance Bonds: The Illusion of Certainty 78:6:56
John P. Gill and David G. Paul

Pipelines

Water Systems Standards Survey 78:11:30
Stephen D. Rhoades
Restoring the Flow of a Finished Water Pipeline 78:11:35
David E. Fitch and Gary R. McCollum
Water Contamination Caused by Gasoline Permeating a Polybutylene Pipe 78:11:39
William G. Leseman
Test Procedures for Determining Cavitation Limits in Control Valves 78:11:55
William J. Rahmeyer

Pollution Control

Providing Water for the Ile de France 78:7:62
Marie Marguerite Bourbigot and Jacques Sibony

Privatization

Roundtable 78:2:24
Viewpoint 78:2:19
Viewpoint 78:3:14
Privatization of Water Systems in France 78:2:34
Jean-Dominique Deschamps
An Engineer's View of Privatization: The Chandler Experience ... 78:2:41
Garret P. Westerhoff
Private Sector Financing for Water Systems 78:2:47
Ronald D. Doctor
Private Operation of US Water Utilities 78:2:49
Michael M. Stump
The French Connection: Cuisine and Water Treatment 78:7:52
Ida M. Sayre
Providing Water for the Ile de France 78:7:62
Marie Marguerite Bourbigot and Jacques Sibony

Public Attitudes

Public Attitudes Toward Water Utilities 78:6:34
James F. Manwaring, Stanley M. Zdep, and Ida M. Sayre

Radium Removal

Weak-Acid Ion Exchange for Removing Barium, Radium, and Hardness 78:9:98
David W. Snyder, Vernon L. Snoeyink, and Julie L. Pfeffer

Rapid Rate Filtration

Removing Giardia Cysts From Low Turbidity Waters by Rapid Rate Filtration 78:5:66
Mohammed Y. Al-Ani, David W. Hendricks, Gary S. Logsdon, and Charles P. Hibler
Rapid Rate Filtration of Low Turbidity Water Using Field-Scale Pilot Filters 78:12:42
Ron R. Mosher and David W. Hendricks

Reducing Costs

Reducing the Cost of Water 78:6:41
John E. Regnier, Edgar H. Waldrup, and John A. Garrett

Recharging Groundwater

Groundwater Recharge: Enhancing Arizona's Aquifers 78:10:85
Wallace A. Ambrose and Pat Lynn

Reservoirs

Returning Recently Covered Reservoirs to Service: Health and Aesthetic Considerations 78:3:94
Stuart W. Krasner and Edward G. Means III

Reverse Osmosis

Removing Trace Organics by Reverse Osmosis Using Cellulose Acetate and Polyamide Membranes 78:4:163
Martin Reinhard, Naomi L. Goodman, Perry L. McCarty, and David G. Argo
Industrial Use of Reverse Osmosis 78:5:47
Paul D. Sinisgalli and James L. McNutt
Posttreatment of Reverse Osmosis Product Waters 78:5:59
Lynn E. Applegate

Safe Drinking Water Act

Amended SDWA Marks New Era in the Water Industry 78:8:66
Michael B. Cook and David W. Schnare

Standards

Water Systems Standards Survey 78:11:30
Stephen D. Rhoades

Surface Chemistry

Surface Chemistry in Water Treatment: Reactions at the Solid-Liquid Interface 78:11:59
Roger C. Bales

Tastes and Odors

The Flavor Profile Analysis Method: Taste and Odor Control of the Future 78:3:50
Jeroen H.M. Bartels, Gary A. Burlingame, and I.H. (Mel) Suffet
A Case Study of Geosmin in Philadelphia's Water 78:3:56
Gary A. Burlingame, Roger Dann, and Geoffrey L. Brock
Oxidation of Five Earthy-Musty Taste and Odor Compounds 78:3:62
Shala Lalezary, Massoud Pirbazari, and Michael J. McGuire
The Chemistry and Physiology of Odor Sensitivity 78:3:70
John E. Amoore
An Early Warning System for Taste and Odor Control 78:3:77
Edward G. Means III and Michael J. McGuire

Chlorine Dioxide for Taste and Odor Control 78:3:84
George S. Walker, Fat Piu (Tom) Lee, and E. Marco Aieta
Returning Recently Covered Reservoirs to Service: Health and Aesthetic Considerations 78:3:94
Stuart W. Krasner and Edward G. Means III
The French Connection: Cuisine and Water Treatment 78:7:52
Ida M. Sayre
Evaluating Activated Carbons for Removing Low Concentrations of Taste- and Odor-Producing Organics 78:11:76
Shala Lalezary, Massoud Pirbazari, and Michael J. McGuire

Trihalomethanes

Removal of Trihalomethanes by Packed-Column and Diffused Aeration 78:2:62
Louis J. Bilello and J. Edward Singley
THM and TOX Formation: Routes, Rates, and Precursors 78:4:156
J. Donald Johnson and James N. Jensen
Removing Trace Organics by Reverse Osmosis Using Cellulose Acetate and Polyamide Membranes 78:4:163
Martin Reinhard, Naomi L. Goodman, Perry L. McCarty, and David G. Argo
Using Isotope Dilution Mass Spectrometry to Determine Aqueous Trichloroacetic Acid 78:4:175
Daniel L. Norwood, Russell F. Christman, J. Donald Johnson, and J. Ronald Hass
Competitive Adsorption Among VOCs on Activated Carbon and Carbonaceous Resin ... 78:4:181
Emery Jenncheng Kong and Francis A. DiGiano
Effects of Low Temperature on the Removal of Trihalomethane Precursors by Coagulation 78:4:189
William R. Knocke, Sara West, and Robert C. Hoehn
Removal of Dissolved Organic Carbon by Coagulation With Iron Sulfate 78:5:74
Robert L. Sinsabaugh III, Robert C. Hoehn, William R. Knocke, and Arthur E. Linkins III
Influence of pH on the Removal of Organics by Granular Activated Carbon 78:5:89
Michael J. Semmens, Gregor E. Norgaard, Gary Hohenstein, and Alan B. Staples
Using Chlorine Dioxide for Trihalomethane Control 78:6:88
Benjamin W. Lykins Jr. and Mark H. Griese

Turbidity

to Chlorine Demand 78:2:72
Edward J. Katz

Variances

Variance Analyses and Criteria for Treatment Regulations .. 78:3:34
Appiah Amirtharajah
Letters 78:5:4
Viewpoint 78:6:14

Viruses

Waterborne Viral Gastroenteritis 78:1:34
Fred P. Williams Jr. and Elmer W. Akin
Isolating Viruses From Finished Water 78:1:56
Joan B. Rose, Charles P. Gerba, Shri N. Singh, Gary A. Toranzos, and Bruce Keswick

Waterborne Disease

Waterborne Viral Gastroenteritis 78:1:34
Fred P. Williams Jr. and Elmer W. Akin
Gastroenteritis: Case Study of a Colorado Outbreak 78:1:40
Richard S. Hopkins, Richard J. Karlin, G. Barry Gaspard, and Roger Smades
Chlorination to Prevent and Control Waterborne Disease 78:1:49
Edwin C. Lippy
Fungi in Distribution Systems 78:1:53
William D. Rosenzweig, Harvey Minnigh, and Wesley O. Pipes
Isolating Viruses From Finished Water 78:1:56
Joan B. Rose, Charles P. Gerba, Shri N. Singh, Gary A. Toranzos, and Bruce Keswick
Legionella Contamination of a Preoperational Treatment Plant 78:1:70
Lance Voss, Kenneth S. Button, Richard C. Lorenz, and Olli H. Tuovinen
Diatomaceous Earth Filtration of *Giardia* Cysts and Other Substances 78:1:76
Kelly P. Langé, William D. Bellamy, David W. Hendricks, and Gary S. Logsdon
Confluence 78:1:85
Variance Analyses and Criteria for Treatment Regulations .. 78:3:34
Appiah Amirtharajah

Water Rights

Western Water Law in Transition 78:10:34
Charles F. Wilkinson
Indian Reservation Water Rights 78:10:48
Richard B. Collins
Water Management in Indian Country 78:10:55
Steven J. Shupe
Reallocating Water in the West 78:10:63
Gary D. Weatherford and Steven J. Shupe
Public Rights at the Headwaters 78:10:72
John E. Thorson
Arizona's Groundwater Code: Strength in Compromise 78:10:79
Kathleen Ferris
Groundwater Recharge: Enhancing Arizona's Aquifers 78:10:85
Wallace A. Ambrose and Pat Lynn

Water Transfers

Reallocating Water in the West 78:10:63
Gary D. Weatherford and Steven J. Shupe
Confluence 78:10:98

Watershed Management

Upland Watershed Management in Rural Pakistan 78:7:72
Robert K. Dixon and James A. Perry

Western Water

Face to Face 78:10:20
Western Water Law in Transition 78:10:34
Charles F. Wilkinson
Indian Reservation Water Rights 78:10:48
Richard B. Collins
Water Management in Indian Country 78:10:55
Steven J. Shupe
Reallocating Water in the West 78:10:63
Gary D. Weatherford and Steven J. Shupe
Public Rights at the Headwaters 78:10:72
John E. Thorson
Arizona's Groundwater Code: Strength in Compromise 78:10:79
Kathleen Ferris
Groundwater Recharge: Enhancing Arizona's Aquifers 78:10:85
Wallace A. Ambrose and Pat Lynn
Design and Operation of a Slow Sand Filter 78:12:35
Timothy J. Seelaus, David W. Hendricks, and Brian A. Janonis
Effects of Cationic Polyelectrolytes on the Removal of Suspended Particulates During Direct Filtration 78:12:57
Theodore S. Tanaka and Massoud Pirbazari

1986 AUTHOR INDEX

Adams, Jeffrey Q.—78:5:38
Aieta, E. Marco—78:3:84; 78:6:62
Akin, Elmer W.—78:1:34
Al-Ani, Mohammed Y.—78:5:66
Ambrose, Wallace A.—78:10:85
Amirtharajah, Appiah—78:3:34
Amoore, John E.—78:3:70
Applegate, Lynn E.—78:5:59
Arboleda-Valencia, Jorgé—78:7:92
Archibald, Elaine M.—78:9:76
Argo, David G.—78:4:163
Bales, Roger C.—78:11:59
Bartels, Jeroen H.M.—78:3:50
Bellamy, William D.—78:1:76
Berg, James D.—78:6:62
Bilello, Louis J.—78:2:62
Bourbigot, Marie Marguerite—78:7:62
Bratby, John R.—78:7:106
Brice, Robert L.—78:6:52
Bridgeman, Phyllis G.—78:6:46
Brock, Geoffrey—78:3:56
Burlingame, Gary A.—78:3:50; 78:3:56
Button, Kenneth S.—78:1:70
Carrier, Richard A.—78:8:70
Chan, Edward H.P.—78:8:43
Cheetham, Ronald D.—78:9:105
Christman, Russell F.—78:4:175
Clark, Robert M.—78:5:38; 78:8:61
Cleasby, John L.—78:12:26; 78:12:66
Collins, Richard B.—78:10:48
Condie, Lyman W.—78:6:73
Cook, Michael B.—78:8:66
Crittenden, John C.—78:9:87
Crooks, Jennifer Kurtz—78:5:94
Curry, Michael D.—78:5:94
Dann, Roger—78:3:56
Dawood, Abdullah A.—78:7:80
Dempsey, Kevin W.—78:11:47
Deschamps, Jean-Dominique—78:2:34
Dever, Raymond J.—78:9:82
Dharmarajah, A.H.—78:12:66
Dietrich, Andrea M.—78:8:70
DiGiano, Francis A.—78:4:181; 78:8:70
Dixon, Robert K.—78:7:72
Dobratz, William R.—78:9:62
Doctor, Ronald D.—78:2:47
Elliott, C. Michael—78:12:52
Ferris, Kathleen—78:10:79
Fitch, David E.—78:11:35; 78:12:52
Garrett, John A.—78:6:41
Gaspard, G. Barry—78:1:40
Gehin, Joseph L.—78:9:87
Gerba, Charles P.—78:1:56
Gill, John P.—78:6:56
Goldstein, James—78:2:52
Goodman, Naomi L.—78:4:163
Griese, Mark H.—78:6:79
Guter, Gerald A.—78:5:83
Hand, David W.—78:9:87
Harrison, Doug—78:9:76
Hart, Frederick L.—78:9:105
Harwig, Ernest—78:5:42
Hass, J. Ronald—78:4:175
Hayashida, Kazu—78:8:43
Hegab, Kamal El Din—78:7:86
Hendricks, David W.—78:1:76; 78:5:66; 78:12:35; 78:12:42
Hibler, Charles P.—78:5:66
Hilmoe, David J.—78:12:26
Hirrel, Timothy D.—78:8:49
Hoehn, Robert C.—78:4:189; 78:5:74
Hohenstein, Gary—78:5:89; 78:8:80
Hopkins, Richard S.—78:1:40
Houck, Mark H.—78:8:53
Hoven, Donald L.—78:11:83
Hrezo, Margaret S.—78:6:46
Janonis, Brian A.—78:12:35
Jensen, James N.—78:4:156
Johnson, J. Donald—78:4:156; 78:4:175
Karlin, Richard J.—78:1:40
Katz, Edward—78:2:72
Keswick, Bruce—78:1:56
Kittredge, David—78:5:42
Knocke, William R.—78:4:189; 78:5:74
Koffskey, Wayne—78:11:66
Kong, Emery Jenncheng—78:4:181
Krasner, Stuart W.—78:3:94
Krill, Robert M.—78:9:70
Kroon, Joseph R.—78:8:30
Lalezary, Shala—78:3:62; 78:11:76
Langé, Kelly P.—78:1:76
Larson, Richard A.—78:2:82
Lauch, Richard P.—78:5:83
Lauer, William C.—78:6:79
Lee, Fat Piu (Tom)—78:3:84
Leidholdt, Ralph W.—78:7:80
Leseman, William G.—78:11:39
Levy, Richard V.—78:9:105
Linkins, Arthur E. III—78:5:74
Lippy, Edwin W.—78:1:49
Logsdon, Gary S.—78:1:76; 78:5:66
Lohman, Stephen R.—78:6:79
Lorenz, Richard C.—78:1:70
Lykins, Benjamin W. Jr.—78:5:38; 78:6:88; 78:9:87; 78:11:66
Lynn, Pat—78:10:85
Males, Richard M.—78:8:61
Manwaring, James F.—78:6:34
Martin, Hugh J.—78:5:52
Maxwell, John M.—78:9:62
McCarty, Perry L.—78:4:163
McCollum, Gary R.—78:11:35
McGuire, Michael J.—78:1:62; 78:3:62; 78:3:77; 78:11:76
McNutt, James L.—78:5:47
Means, Edward G. III—78:1:62; 78:3:77; 78:3:94
Mery, Patricia C.—78:8:75
Miller, Gary R.—78:5:52
Miller, Richard—78:4:146
Miller, Robert G.—78:11:66
Minnigh, Harvey—78:1:53
Mosher, Ron R.—78:12:42
Nichols, David G.—78:1:45
Norgaard, Gregor E.—78:5:89; 78:8:80
Norwood, Daniel L.—78:4:175
Otsuka, Dennis J.—78:1:62
Paul, David G.—78:6:56
Perry, James A.—78:7:72
Pfeffer, Julie L.—78:9:98
Pipes, Wesley O.—78:1:53; 78:11:47
Pirbazari, Massoud—78:3:62; 78:11:76; 78:12:57
Rahmeyer, William J.—78:11:55
Randall, Dean—78:8:53
Reed, Gregory D.—78:8:75
Regnier, John E.—78:6:41
Reinhard, Martin—78:4:163
Reynolds, Marty L.—78:5:94
Rhoades, Stephen D.—78:11:30
Rogers, Stephen E.—78:6:79
Rose, Joan B.—78:1:56
Rosenzweig, William D.—78:1:53
Salo, John E.—78:9:76
Sayre, Ida M.—78:6:34; 78:7:52
Schalekamp, Maarten—78:8:36
Schnare, David W.—78:8:66
Schwartz, Barry J.—78:11:83
Seelaus, Timothy J.—78:12:35
Semmens, Michael J.—78:2:76; 78:5:89; 78:8:80
Shierry, Robert S.—78:11:44
Shupe, Steven J.—78:10:55; 78:10:63
Sibony, Jacques—78:7:62
Singh, Shri N.—78:1:56
Singley, J. Edward—78:2:62
Sinisgalli, Paul D.—78:5:47
Sinsabaugh, Robert L. III—78:5:74
Smades, Roger—78:1:40
Smith, Ronald A.—78:5:42
Snoeyink, Vernon L.—78:2:82; 78:5:94; 78:9:98
Snyder, David W.—78:9:98
Sonzogni, William C.—78:9:70
Stanforth, Robert R.—78:1:45
Staples, Alan B.—78:2:76; 78:5:89; 78:8:80
Steinbergs, Charles Z.—78:6:94
Stolzenburg, Thomas R.—78:1:45
Strayer, Robert F. Jr.—78:8:30
Stump, Michael M.—78:2:49
Suffet, I.H. (Mel)—78:3:50
Tanaka, Theodore S.—78:1:62; 78:12:57
Thorson, John E.—78:10:72
Toranzos, Gary A.—78:1:56
Tuovinen, Olli H.—78:1:70
Voss, Lance—78:1:70
Voudrias, Evangelos A.—78:2:82
Wada, Ronald N.—78:8:43
Waldrup, Edgar H.—78:6:41
Walker, George S.—78:3:84
Walker, William R.—78:6:46
Weatherford, Gary D.—78:10:63
Weng, Cheng-nan—78:11:83
West, Sara—78:4:189
Westerhoff, Garret P.—78:2:41; 78:4:146
Wilkinson, Charles F.—78:10:34
Williams, Fred P. Jr.—78:1:34
Wintish, J. Peter—78:5:34
Wright, Jeff R.—78:8:53
Wubbena, Robert L.—78:9:62
Zdep, Stanley M.—78:6:34

1986 GEOGRAPHIC INDEX

Canada

Chlorine Dioxide for Taste and Odor Control 78:3:84
George S. Walker, Fat Piu (Tom) Lee, and E. Marco Aieta

Egypt

Organizational and System Improvements in Cairo 78:7:86
Kamal El Din Hegab

France

Privatization of Water Systems in France 78:2:34
Jean-Dominique Deschamps

The French Connection: Cuisine and Water Treatment 78:7:52
Ida M. Sayre

Providing Water for the Ile de France 78:7:62
Marie Marguerite Bourbigot and Jacques Sibony

Oman

Desalination: The Solution to Oman's Thirst 78:7:80
Abdullah A. Dawood and Ralph W. Leidholdt

Pakistan

Upland Watershed Management in Rural Pakistan 78:7:72
Robert K. Dixon and James A. Perry

South America

A New Approach to Treatment Plant Design and Construction in Latin America 78:7:92
Jorgé Arboleda-Valencia

Optimizing Direct Filtration in Brasilia 78:7:106
John R. Bratby

Switzerland

Computer-Controlled Groundwater Management in Zurich 78:8:36
Maarten Schalekamp

United States

Alabama

Reducing the Cost of Water 78:6:41
John E. Regnier, Edgar H. Waldrup, and John A. Garrett

Arizona

An Engineer's View of Privatization: The Chandler Experience ... 78:2:41
Garret P. Westerhoff

Tucson's Customer Relations Program 78:6:52
Robert L. Brice

Arizona's Groundwater Code: Strength in Compromise 78:10:79
Kathleen Ferris

Groundwater Recharge: Enhancing Arizona's Aquifers 78:10:85
Wallace A. Ambrose and Pat Lynn

California

An Early Warning System for Taste and Odor Control 78:3:77
Edward G. Means III and Michael J. McGuire

Returning Recently Covered Reservoirs to Service: Health and Aesthetic Considerations 78:3:94
Stuart W. Krasner and Edward G. Means III

Ion Exchange for the Removal of Nitrate From Well Water 78:5:83
Richard P. Lauch and Gerald A. Guter

Removal of By-products of Chlorine and Chlorine Dioxide at a Hemodialysis Center 78:6:94
Charles Z. Steinbergs

Removing Contaminants by Groundwater Recharge Basins 78:9:76
John E. Salo, Doug Harrison, and Elaine M. Archibald

Colorado

Gastroenteritis: Case Study of a Colorado Outbreak 78:1:40
Richard S. Hopkins, Richard J. Karlin, G. Barry Gaspard, and Roger Smades

A Zero Discharge Steam Electric Power Generating Station ... 78:5:52
Hugh J. Martin and Gary R. Miller

Experience With Chlorine Dioxide at Denver's Reuse Plant 78:6:79
William C. Lauer, Stephen R. Lohman, and Stephen E. Rogers

Design and Operation of a Slow Sand Filter 78:12:35
Timothy J. Seelaus, David W. Hendricks, and Brian A. Janonis

Florida

Water Contamination Caused by Gasoline Permeating a Polybutylene Pipe 78:11:39
William G. Leseman

Hawaii

Honolulu's New SCADA System 78:8:43
Ronald N. Wada, Edward H.P. Chan, and Kazu Hayashida

Illinois

Technical Note: Biological Removal of Ammonia at Roxana, Illinois 78:5:94
Jennifer Kurtz Crooks, Vernon L. Snoeyink, Michael D. Curry, and Marty L. Reynolds

The Economics of Remote Meter Reading 78:11:44
Robert S. Shierry

Indiana

Using Chlorine Dioxide for Trihalomethane Control 78:6:88
Benjamin W. Lykins Jr. and Mark H. Griese

Simulating Water System Operation During Periods of Drought 78:8:53
Dean Randall, Mark H. Houck, and Jeff R. Wright

Louisiana

Chemical Products and Toxicologic Effects of Disinfection 78:11:66
Benjamin W. Lykins Jr., Wayne Koffskey, and Robert G. Miller

Maryland

Automating Water Consumption Data Manipulation 78:8:49
Timothy D. Hirrel

Responding to Industrial Contamination of Groundwater: A Case Study 78:9:82
Raymond J. Dever

Massachusetts

Full-Cost Water Pricing 78:2:52
James Goldstein

Occurrence and Public Health Significance of Invertebrates in Drinking Water Systems 78:9:105
Richard V. Levy, Frederick L. Hart, and Ronald D. Cheetham

Montana

Public Rights at the Headwaters 78:10:72
John E. Thorson

New Hampshire

Regional Reactivation of Granular Activated Carbon 78:5:38
J.Q. Adams, R.M. Clark, B.W. Lykins Jr., and David Kittredge

New Jersey

Ozonation: An Economic Choice for Water Treatment 78:11:83
Cheng-nan Weng, Donald L. Hoven, and Barry J. Schwartz

New York

Choosing a Second Generation Computerized Billing System 78:5:34
J. Peter Wintish

Restoring the Flow of a Finished Water Pipeline 78:11:35
David E. Fitch and Gary R. McCollum

Implementing Direct Filtration and Natural Freezing of Alum Sludge 78:12:52
David E. Fitch and C. Michael Elliott

Ohio

Design of the GAC Treatment Facility at Cincinnati 78:4:146
Garret P. Westerhoff and Richard Miller

Developing and Applying the Water Supply Simulation Model ... 78:8:61
Robert M. Clark and Richard M. Males

Pennsylvania

A Case Study of Geosmin in Philadelphia's Water 78:3:56
Gary A. Burlingame, Roger Dann, and Geoffrey L. Brock

Washington

Protection and Management of Spokane's Sole Source Aquifer 78:9:62
William R. Dobratz, Robert L. Wubbena, and John M. Maxwell

Wisconsin

Chemical Monitoring of Wisconsin's Groundwater 78:9:70
Robert M. Krill and William C. Sonzogni

Design and Evaluation of an Air-Stripping Tower for Removing VOCs From Groundwater 78:9:87
David W. Hand, John C. Crittenden, Joseph L. Gehin, and Benjamin W. Lykins Jr.

OUR THANKS TO 1986 REVIEWERS

The editors of the JOURNAL rely on expert reviews by professionals in the field of water supply in order to select the best papers from those contributed to the JOURNAL. The staff acknowledges the following reviewers whose time and efforts allowed the JOURNAL to maintain a high standard of quality in papers published in 1986.

E. Marco Aieta
Katherine T. Alben
A. Amirtharajah
Gary L. Amy
J. Darrell Bakken
Kenneth W. Ball
R.F. Banker
Richard H. Barnett
J. James Barr
Bill Batchelor
E. Robert Baumann
Robert A. Baumeister
Charles R. Beer
William D. Bellamy
Stephen L. Bishop
Paul T. Bowen
Paul T. Brasher
Herbert J. Brass
Richard Bull
Phillip D. Campbell
Bob Carlson
Keith E. Carns
A. Lee Cesario
John Chang
Edward S.K. Chian
Russell F. Christman
Robert M. Clark
Robert R. Clark
John L. Cleasby
Dennis A. Clifford
Neil M. Cline
William J. Conlon
E. J. Connelley
William J. Cooper
David A. Cornwell
C. Richard Cothern
Douglas J. Crawford-Brown
John C. Crittenden
David L. Crowson
Donald Crum
Frederick James Dart
Charles T. Decker
Rolf A. Deininger
Brian A. Dempsey
Steven K. Dentel
Jack C. Dice
Francis A. DiGiano
Peter Doe
Ronald C. Dressmann
Charles Driscoll
Glenn M. Dykes Jr.
Andrew Eaton
Stephen C. Edberg
James K. Edzwald
Geoffrey G. Eicholz
Frederick H. Elwell
Jerry W. Elwood
John F. Ferguson
Kenneth J. Ficek
Paul D. Foley
Lloyd C. Fowler
Edwin E. Geldreich
Charles P. Gerba
Mriganka M. Ghosh
Jerome B. Gilbert
Harold T. Glaser
William H. Glaze
Gilbert Gordon
John A. Gordon
Randolph Goulding
Rodney W. Graupmann
Walter Grayman
Charles N. Haas
Carl L. Hamann
Ronald D. Hardten
Robert B. Heater
David W. Hendricks
Jeffrey A. Herndon
Robert C. Hoehn
John C. Hoff
Jack W. Hoffbuhr
Edward Holtgraver
Wendell R. Inhoffer
Joseph G. Jacangelo
Donald E. Jackson
S. Rod Jenkins
Robert G. Jensen
J. Donald Johnson
Robert Johnson
George W. Johnstone
Richard J. Karlin
Bruce Kimmel
William R. Knocke
Stuart Krasner
Donald J. Kullmann
Les Lampe
William L. Lappenbusch
L. Stephen Lau
Donald Lauria
Desmond F. Lawler
Ramon G. Lee
Larry Leong
Raymond D. Letterman
Edward W. Limbach
K. Daniel Linstedt
Gary S. Logsdon
Karl E. Longley
Daniel Loucks
O. Thomas Love Jr.
Benjamin W. Lykins Jr.
Patrick C. Mann
Perry L. McCarty
Gordon A. McFeters
Michael J. McGuire
Laurent McReynolds
Daniel Menzel
Douglas T. Merrill
Roger A. Minear
James J. Morgan
Richard H. Moser
Raymond C. Murphy
John O. Nelson
John T. O'Connor
Daniel A. Okun
Betty H. Olson
Jerry Ongerth
Gary L. Owen
Frances Parsons
Vito F. Pennacchio
Wesley O. Pipes
Massoud Pirbazari
Stephen J. Randtke
Robert H. Reinert
Richard Reitz
David Rexing
Harry F. Ridgeway
Bruce E. Rittmann
Paul V. Roberts
R. Bruce Robinson
J.R. Rossum
Robert A. Ryder
Gary S. Saleba
Stan Saylor
Michael R. Schock
Gene A. Seibel
Harris F. Seidel
Ramon J. Seidler
Marjorie G. Shovlin
Vernon L. Snoeyink
Gerald E. Speitel
John E. Spitko Jr.
Otis J. Sproul
J. Dietrich Stroeh
Irwin H. (Mel) Suffet
James M. Symons
Theodore S. Tanaka
Carol H. Tate
Floyd B. Taylor
James S. Taylor
Raymond H. Taylor
John C. Thompson Jr.
Thomas Tiner
Raymond E. Topping
Frank J. Trelease
Gordon Treweek
Albert R. Trussell
R. Rhodes Trussell
Olli H. Tuovinen
George S. Uyesugi
John N. Veenstra
T. Viraraghavan
Jeptha A. Wade Jr.
George S. Walker
Thomas M. Walski
Walter J. Weber Jr.
Robert Weir
Garret P. Westerhoff
George Clifford White
John T. Wilson
Roy L. Wolfe
Charles E. Woods
Sydney L. Zeid
John Zirschky